

HARD GRADATIONAL CLAY LOAM

General Description: *Hard loam becoming more clayey and coarsely structured with depth, grading to a calcareous clay*

Landform: Alluvial plain

Substrate: Medium textured outwash sediments mantled by fine carbonates of aeolian origin

Vegetation:



Type Site: Site No.: CM094

1:50,000 sheet:	6530-4 (Mundoora)	Hundred:	Redhill
Annual rainfall:	415 mm	Sampling date:	10/05/02
Landform:	Flat alluvial plain, 0% slope		
Surface:	Hard setting with no stones		

Soil Description:

<i>Depth (cm)</i>	<i>Description</i>
0 – 15	Hard dark reddish brown heavy silty loam with coarse cloddy structure. Clear to:
15 – 44	Dark reddish brown heavy silty loam with coarse prismatic structure. Clear to:
44 – 70	Reddish brown highly calcareous silty clay loam with weak subangular blocky structure. Gradual to:
70 – 100	Dark reddish brown moderately calcareous light clay with weak subangular blocky structure. Diffuse to:
100 – 150	Red moderately calcareous clay loam with moderate subangular blocky structure.



Classification: Sodic, Calcic, Red Kandosol; medium, non-gravelly, silty / clayey, moderate

Summary of Properties

Drainage: Well drained. Soil is unlikely to remain saturated for more than a few days at a time following heavy or prolonged rainfall.

Fertility: Note that site is on a sheep camp – hence the very high phosphorus and potassium levels in the surface soil. Inherent fertility is very high as indicated by the exchangeable cation figures down the profile.

pH: Neutral at the surface, alkaline with depth.

Rooting depth: 44 cm in pit.

Barriers to root growth:

Physical: Topsoil is hard, cloddy and sodic. Subsoil is dispersive and highly sodic.

Chemical: Moderately high salinity below 44 cm. High born levels below 15 cm. Sodium levels are possibly toxic below 44 cm.

Water holding capacity: Surface: approx. 130 mm/m over 0.15 m = 20 mm
Subsurface: approx. 100 mm/m over 0.29 m = 29 mm
Total: = 49 mm (low)

Note: raised boron, sodium and salinity levels, and poor structure would limit plant root exploration of the subsurface layer.

Seedling emergence: Fair to poor due to hard, cloddy and sodic surface. Organic matter levels need to be maintained to at least prevent soil structure from worsening. In particular, retention of stubbles should help to improve surface soil condition.

Workability: Fair to poor due to a hard, cloddy and sodic surface.

Erosion Potential

Water: Low.

Wind: Low.

Laboratory Data

Depth cm	pH H ₂ O	pH CaCl ₂	CO ₃ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO ₄ -S mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	7.2	6.9	0	0.34	2.14	2.1	127*	1121*	22	8.0	1.92	45.5	75.4	2.98	21.9	13.7	4.03	1.39	2.74	6
0-15	7.7	7.1	0	0.30	1.66	1.2	54	616	15	4.4	1.93	42.7	23.8	0.93	22.0	13.1	5.11	2.51	1.32	11
15-44	8.9	8.2	1	0.46	3.00	0.8	14	591	35	22.2	1.91	21.9	5.90	0.47	28.5	13.4	7.05	6.65	1.40	23
44-70	8.9	8.5	11	1.62	13.1	0.4	23	550	554	24.0	1.94	13.4	2.27	0.44	32.2	12.1	7.22	11.5	1.34	36
70-100	9.0	8.5	2	1.36	13.7	0.1	12	484	284	17.1	1.15	10.8	2.31	0.48	21.9	6.18	5.75	8.92	1.03	41
100-150	9.1	8.5	12	1.52	14.2	0.1	28	670	254	13.6	1.49	9.79	1.38	0.43	25.0	7.36	7.07	9.84	0.76	39

Note: Paddock sample bulked from cores (0-10 cm) taken around the pit.

* Site is on a sheep camp.

Sum of cations (an estimate of cation exchange capacity or CEC) is a measure of the soil's capacity to store and release major nutrient elements.

ESP (exchangeable sodium percentage) is derived by dividing the exchangeable sodium value by the estimated CEC.